

PCT/EP03/07051
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14 October 2004

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Patent Claims:

1. A device for monitoring an electrolytic process, comprising at least one anode and at least one cathode, at least one first reference electrode being disposed at the surface of the at least one anode and at least one second reference electrode being disposed at the surface of the at least one cathode, at least one voltmeter being respectively provided for measuring the electric voltages between the at least one anode and the at least one first reference electrode, between the at least one first and the at least one second reference electrode and between the at least one second reference electrode and the at least one cathode, wherein the cathode is a wafer or a chip carrier substrate.
2. The device according to claim 1, wherein the at least one reference electrode communicates through capillaries with the surface of the at least one anode or with the surface of the at least one cathode.
3. The device according to claim 2, wherein means are provided by means of which electrolyte fluid is deliverable through the capillaries to the at least one reference electrode.
4. The device according to one of the aforementioned claims, wherein the at least one anode and the at least one cathode are paralleled and oriented horizontally or tilted from horizontal.
5. The device according to one of the aforementioned claims, wherein the anode is a metal plate.

6. A method of monitoring an electrolytic process in an electrolytic cell comprised of at least one anode and of at least one cathode, at least one first reference electrode being disposed at the surface of the at least one anode and at least one second reference electrode being disposed at the surface of the at least one cathode, at least one voltmeter being respectively provided for measuring the electric voltages between the at least one anode and the at least one first reference electrode, between the at least one first and the at least one second reference electrode and between the at least one second reference electrode and the at least one cathode, wherein the cathode is a wafer or a chip carrier substrate, said method involving the following method steps:

- a) providing an electric current flow between the at least one anode and the at least one cathode,
- b) concurrently measuring the respective electric voltages between
 - b1) the at least one anode and the at least one first reference electrode,
 - b2) between the at least one first and the at least one second reference electrode and
 - b3) between the at least one second reference electrode and the at least one cathode.

15 7. The method according to claim 6, wherein the at least one reference electrodes are brought into contact with the surface of the at least one anode or with the surface of the at least one cathode by way of 20 capillaries.

25 8. The method according to claim 7, wherein electrolyte fluid is delivered through the capillaries to the at least one reference electrodes.

30 9. The method according to one of the claims 6 – 8, wherein the at least one anode and the at least one cathode are paralleled and oriented

horizontally or tilted from horizontal.

10. The method according to one of the claims 6 – 9, **wherein** the anode is a metal plate and **wherein** the metal is electrolytically deposited on the wafer or chip carrier substrate.